



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

FIVE-YEAR REVIEW

NORTHWEST TRANSFORMER
SOUTH HARKNESS SITE
EVERSON, WASHINGTON

Certification of Protectiveness

Based on the attached Five-year (periodic) review completed in September, 1998, the remedy taken at the Northwest Transformer Superfund Site remains protective, there is no evidence of migration of residual contaminants from soil to groundwater, and even in the event the cap is disturbed for site improvements, direct contact exposure with the residual soil contamination is not expected to pose significant risks. Therefore, EPA has determined that site conditions allow for unrestricted use and unlimited exposure, and no further CERCLA periodic reviews are needed or will be conducted at this site.

The State of Washington Department of Ecology has reviewed this report and concurred with its conclusions.

I certify that the remedy selected and implemented at this Site remains protective of human health and the environment.

A handwritten signature in black ink, appearing to read "Michael Gearheard", written over a horizontal line.

Michael Gearheard, Acting Director
Office of Environmental Cleanup, Region 10

12-17-98
Date

USEPA SF



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**FINAL FIVE-YEAR REVIEW
NORTHWEST TRANSFORMER
SOUTH HARKNESS SITE
EVERSON, WASHINGTON**

ARCS Region 10

Contract No. 68-W9-0020
Work Assignment No. 20-40-OPD7

September 11, 1998

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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REVISION PAGE

<u>Revision Date</u>	<u>Revision Number</u>	<u>Revised Section and/or Page Numbers</u>
August 1, 1997	0	All pages
August 11, 1998	1	All pages
September 11, 1998	2	All pages

1. INTRODUCTION

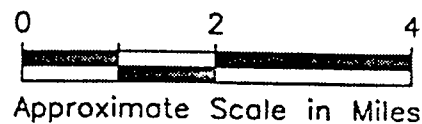
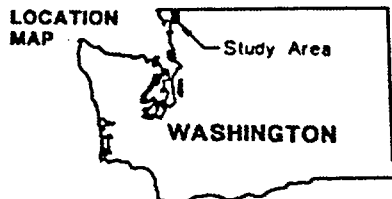
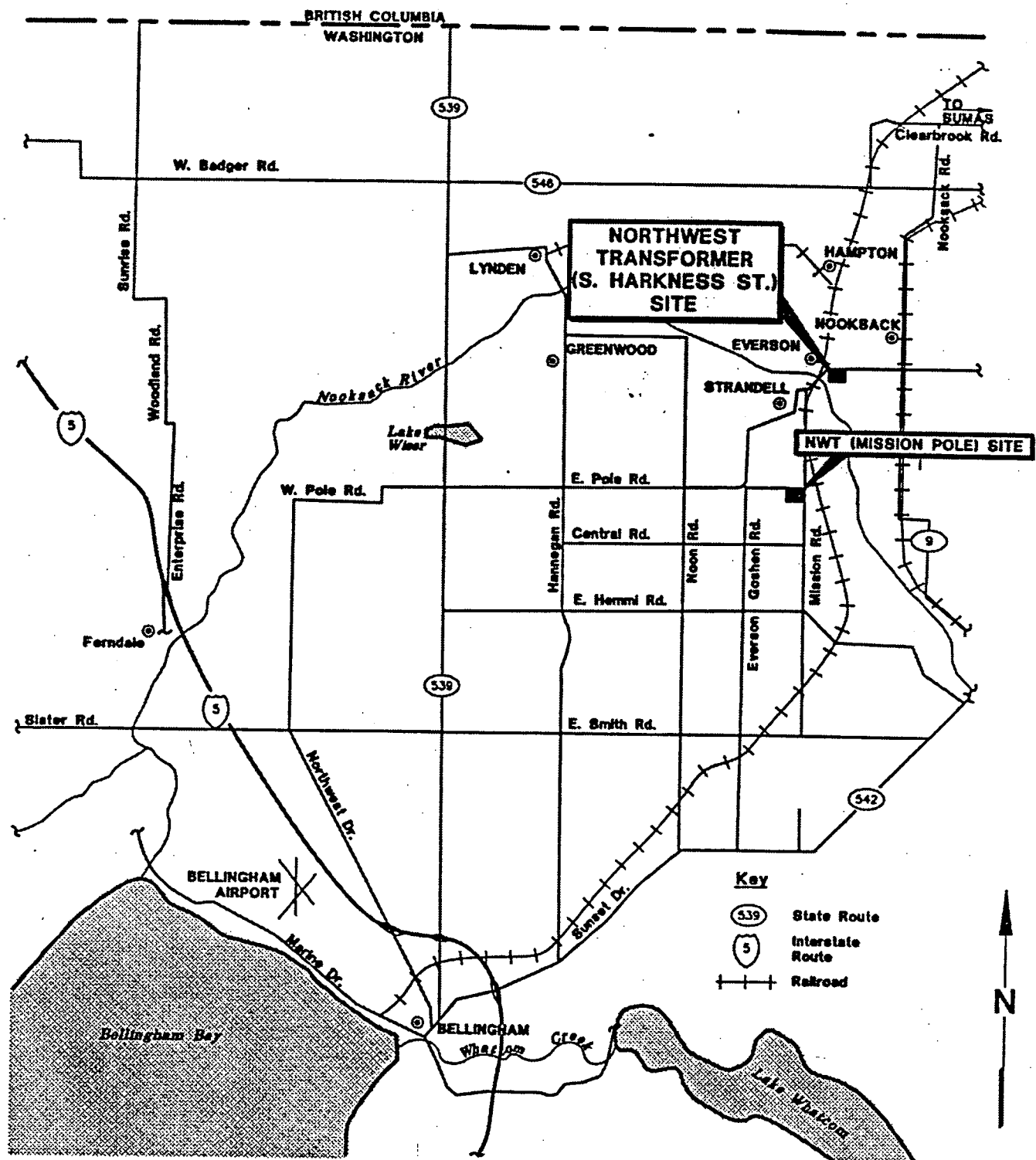
The Northwest Transformer South Harkness site (NWT-SHS), located at 107 South Harkness Street, City of Everson, in Whatcom County, Washington (Figures 1, 2, and 3), was placed on the United States Environmental Protection Agency (EPA) National Priorities List (NPL), Appendix B to the National Oil and Hazardous Substance Pollution Contingency Plan (NCP) on February 21, 1990, 55 *Federal Register* 6154. The site was listed pursuant to Section 105 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, based on evidence of the release of hazardous substances—polychlorinated biphenyls (PCBs)—which presented a significant risk to human health or the environment. An Administrative Order on Consent (Consent Order; EPA 1992) was issued on June 17, 1992, for Remedial Investigation/Feasibility Study (RI/FS) actions. An EPA-approved RI was conducted by potentially responsible parties (PRPs) after which a Site Structure Removal Assessment and Engineering Evaluation/Cost Analysis (EE/CA) was prepared by the PRPs (Landau 1993). The EPA published a proposed plan in August 1993 for a removal action (RA), the selected remedy, at the site.

The RA was completed with the issuance of a Remedial Investigation/Removal Action Report on August 26, 1994 (Landau 1994b). A Record of Decision (ROD) was issued by the EPA (1994a). The selected remedy in the ROD was no further action under CERCLA authority. The ROD required post-RA monitoring of groundwater, until the CERCLA five-year review was performed, to determine whether groundwater remains uncontaminated and whether such monitoring should be continued. Five post-RA groundwater monitoring events have been completed by the PRPs (Landau 1997). In addition, a sixth post-RA groundwater sampling event was conducted for EPA by Ecology & Environment, Inc. (E & E), in December 1997.

The site was deleted from the NPL in September, 1997.

Because hazardous substances remain in place at the site, Section 121 of CERCLA requires a five-year review of the selected remedy. The purpose of a five-year review is to ensure that the remedial action remains protective of public health and the environment and is functioning as designed. This document summarizes the findings of the review for this site.

Section 2 of this report provides background data on the site, a summary of remedial activities, and a discussion of legally applicable or relevant and appropriate requirements (ARARs) and guideline review. Site conditions are summarized in Section 3 and recommendations regarding further work at the site are provided in Section 4. Appendix A includes photographs of the site taken July 25, 1997.



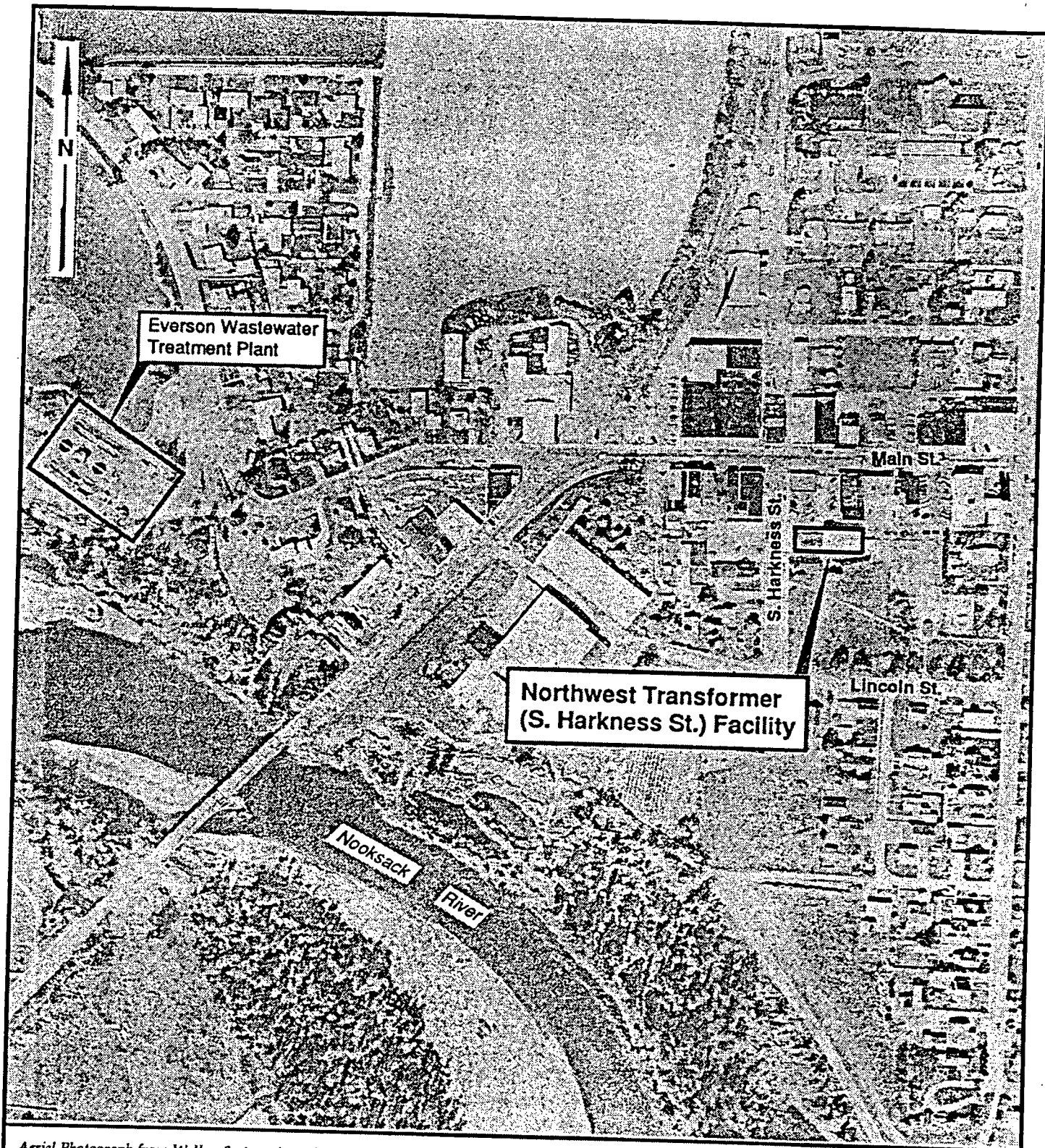
ecology and environment, inc.
International Specialists in the Environment
Seattle, Washington

**NORTHWEST TRANSFORMER
(S. Harkness Street)
Everett, Washington**

Reference: Drawing from *Landau Associates, Inc.* Report:
Remedial Investigation/Removal Action
Northwest Transformer (S. Harkness St.) Site
Everett, Washington; Figure 1

**Figure 1
SITE LOCATION MAP**

Drawn: MRE	Date: 3/31/97	Job No. ZM5071	Dwg. No. ZM5071F1
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Aerial Photograph from Walker & Associates, Inc. (April 10, 1992)

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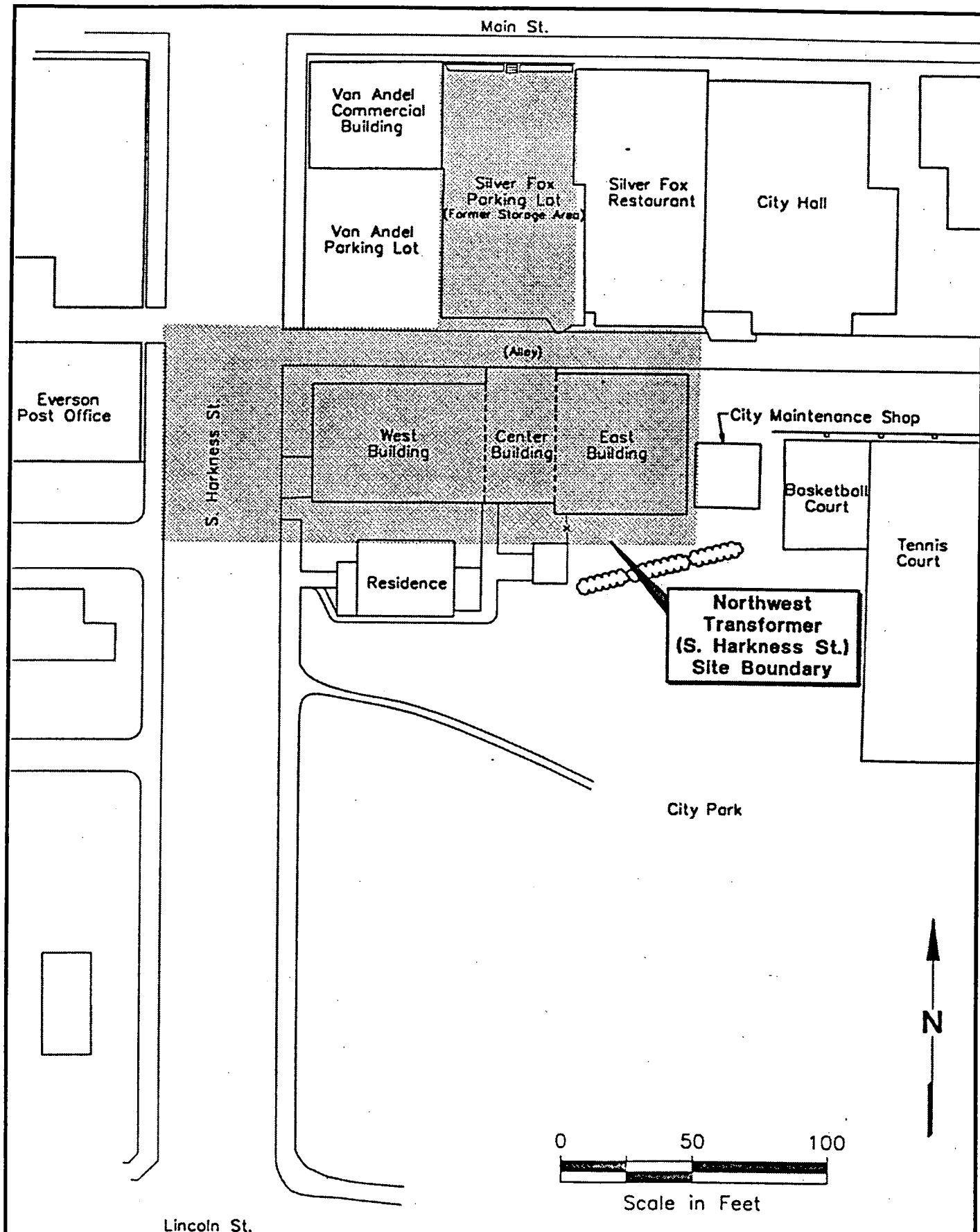
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**NORTHWEST TRANSFORMER
(S. Harkness Street)
Everett, Washington**

Reference: Drawing from *Lundin Associates, Inc.* Report:
Remedial Investigation/Removal Action
Northwest Transformer (S. Harkness St.) Site
Everett, Washington, Figure 2

**Figure 2
AERIAL SITE PLAN**

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**NORTHWEST TRANSFORMER
(S. Harkness Street)
Everett, Washington**

Reference: Drawing from *Landau Associates, Inc.* Report:
Remedial Investigation/Removal Action
Northwest Transformer (S. Harkness St.) Site
Everett, Washington: Figure 3

**Figure 3
SITE MAP**

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2. SITE BACKGROUND

This section includes a description of the site and surrounding area, a summary of remedial activities conducted, and review of standards/ARARs.

2.1 SITE DESCRIPTION

The approximately half-acre NWT-SHS site is located in a mixed commercial/residential area of downtown Everson, Washington (Figure 3). The site was initially the location of a blacksmith shop. Between 1958 and 1987, facilities at the site were utilized for the salvage, repair, and manufacture of electrical distributor transformers, some of which contained dielectric fluids including PCBs.

The site contained three interconnected buildings and a storage area. The west and center buildings were part of the blacksmith shop and were present before 1958. The east building was constructed in approximately 1971 on an area previously used for material storage. Unpaved until some time between 1983 and 1986, the lot north of the buildings was used for storage of transformer casings and drums of dielectric fluids, derelict transfer parts, and insulators. PCB-containing waste oil used as fuel for the shop heating furnace was stored in three 300-gallon tanks on the northern side of the west building. The west building housed an electric oven used to bake out residual oils from transformer components. A sink in the northwest corner of the west building was connected to a combined sanitary sewer/storm drain line until 1972 when the line was converted to a combined sanitary sewer/storm line that discharged to the City of Everson wastewater treatment plant. A floor drain in the east building was connected to the same combined sanitary sewer/storm line. The central building was used for painting transformers and included a paint area exhaust duct on the south side of the room.

The NWT-SHS building area is bordered across the alley to the north by the Von An del commercial building and parking lot; the site's former storage lot (previously fenced on the north side along Main Street), now a restaurant parking lot; and the Silver Fox Restaurant. A city maintenance shop and Everson City Hall are located east and northeast, respectively, of the buildings area. A private residence and a public park exist immediately south of the area. The Everson Post Office is located west of the area, across South Harkness Street.

Approximately 400 people reside within 1 mile of the site. Two parks and one school are located within 1 mile of the site. Rural farm lands comprise much of the surrounding area, which includes the town of Nooksack, located 0.75 mile to the northeast, and the town of Lynden, located 5 miles to the northwest.

The site ranges in elevation from approximately 80 to 85 feet above mean sea level (MSL) (USGS 1978). The main channel of the Nooksack River, which flows to the northwest in this area, is located approximately 1,000 feet southwest of the site (Figure 1). Everson is located on the relatively flat Nooksack River flood plain.

An unconfined aquifer consisting of alluvial and/or glacial outwash deposits of silt, sand, and gravel underlies the site to a depth of approximately 56 feet below ground surface (BGS). A clay aquitard of unknown thickness was identified below this aquifer. Water level measurements from wells and piezometers installed during the RI indicate that in the unconfined aquifer, groundwater at the site flows generally westward to southwestward toward the Nooksack River. In the northern portion of the site, groundwater appears to flow toward the northwest. This flow pattern appears to be the result of mounding of groundwater near the southeastern portion of the site, which has tentatively been attributed to possible effects of a former septic system drain field. Depth to groundwater as measured in any given well or piezometer fluctuates by as much as six feet. Depth to groundwater across the site varies by location (and time) from between approximately 1 and 9 feet BGS.

The Nooksack River is the nearest major surface water feature. No direct overland link between the site and river was identified. Stormwater from the site could either infiltrate down to groundwater and migrate to the river or enter the river, either directly or indirectly, via the sanitary sewer and the Everson Wastewater Treatment Plant, or the storm drain systems at the site.

2.2 SUMMARY OF REMEDIAL INVESTIGATION AND PRE-REMEDIAL INVESTIGATION FINDINGS

In accordance with the Consent Order, a focused RI was conducted for a group of PRPs by their contractor, Landau Associates, Inc. (Landau). The primary purpose of the RI was characterization of the nature and extent of contamination at the site including the buildings area, storage lot across the alley to the north, sanitary sewer/storm drain pipeline and connections from the site, and areas in close proximity to these locations.

The RI included an assessment of:

- Site structures for building contamination as well as structural integrity and safety;
- Pipelines for potential sediment migration in the pipeline from the site to the Nooksack River;
- Hydrogeologic conditions and the potential presence of contaminants in and transport via groundwater;
- Air pathways for potential atmospheric contamination and airborne transport of contaminants; and
- The need for a removal as well as developing/evaluating removal alternatives.

2.2.1 Site Structure Assessment Findings

Geiger Engineers (subcontractor to Landau) found that the buildings were unsafe and recommended temporary shoring of the west building roof and that measures be taken to reduce water leakage into the building. An inventory of building contents was compiled. An asbestos investigation identified asbestos containing materials only in furnace insulation tape. Worst case sample locations were chosen to evaluate building contamination.

Furnace and oven residues were found to be contaminated with PCBs as were the debris found in two transformer casings, the northern wall of the west building, floor residues and floor concrete. Petroleum hydrocarbons (TPH) were also found in the same samples. Carcinogenic polycyclic aromatic hydrocarbons (PAHs) and trace levels of dioxins/furans were found in furnace ash/soot and oven residue. Priority pollutant metals were detected but only at levels below Resource Conservation Recovery Act (RCRA) Toxicity Characteristic Leaching Procedure (TCLP) hazardous waste standards.

2.2.2 Soil Conditions

PCBs were found in site soils at concentrations up to 250 parts per million (ppm) versus maximum background soil levels of 0.52 ppm. TPH concentrations ranged up to 60,000 ppm with background levels of up to 770 ppm. Dioxin/furan was found at a maximum concentration of 0.000048 ppm with background at 0.000013 ppm. The maximum carcinogenic PAH concentration was 62 ppm versus the maximum background concentration of 1.5 ppm. Xylene concentrations were the highest of the volatile organic compounds (VOCs) detected (maximum 2,800 ppm). Metals detected included arsenic (maximum concentration 24 ppm) and lead (maximum concentration 1,410 ppm).

2.2.3 Groundwater Conditions

No significant concentrations of PCBs, TPH, PAHs, or VOCs were detected in groundwater during the first of three rounds (February 8 - 10, 1993; July 7 - 8, 1993; and November 30 - December 1, 1993) of sampling of four monitoring wells installed at the site (Figure 4). Arsenic was detected only at levels below the maximum contaminant level (MCL) of 50 parts per billion (ppb); lead was detected at concentrations below the action level of 15 ppb (used in lieu of MCL). A thin immiscible layer containing trichloroethylene (17 ppb) was found in well MW-2 during the second sampling event. During the third sampling event, an immiscible layer sample collected from MW-2 contained no trichloroethylene, but contained PCBs at approximately 0.85 ppb, and TPH-Diesel (TPH-D) at 270,000 ppb. Groundwater samples collected from MW-2 during the second and third sampling events contained TPH-D at concentrations of 1,300 ppb and 270 ppb, respectively. Heptachlor epoxide, a chlorinated pesticide, was detected at 0.006 ppb (below its 0.2 ppb MCL) in water from MW-4.

2.2.4 Site Sediments

PCBs were found in the building floor drain/sump and piping system during EPA and Washington Department of Ecology (Ecology) sampling events conducted prior to and during the RI. The maximum values were 154 ppm in the east building floor drain and 93 ppm in the east building pipeline. TPH was found in the pipeline system at a maximum of 290,000 ppm. PAHs were found only in pipeline samples from one manhole in the center of S. Harkness Street just north of the Post Office at a maximum of 28.5 ppm. Metals concentrations found in the pipelines from the buildings were less than RCRA TCLP regulatory levels. Metals concentrations in storm drains and manholes were lower than building pipeline levels and less than or similar to levels found in the system downstream of the site. VOCs (xylene, toluene, ethylbenzene) were found in a catch basin west of the site with toluene found at a similar level in another upstream catch basin.

A pipeline and sediment assessment implemented by the PRPs during the RI determined that site sediments did not migrate far from the facility and that the possibility of significant contamination of downstream sediments was unlikely.

2.2.5 Air

An air pathways assessment (Landau 1994) identified four atmospheric sources:

- Oil furnace used to heat the building using waste transformer oils;

- Electric oven used to bake out residual oil from transformer parts;
- Exhaust duct for the paint bath; and
- Soils from the unpaved storage lot.

Analytical results for soil samples taken from downwind locations from the site were compared to results for background soils. No significant differences were observed. An assessment of potential emissions during site operations (1958-1987) concluded that no significant emissions were likely during facility operations.

2.2.6 River Sediment

PCBs were detected at 0.16 ppm in a Nooksack River sediment sample collected by Ecology on December 19, 1985. This sample was collected in the vicinity of a storm drain outfall that was once connected to the site. In 1972 a combined sanitary sewer/storm drain line discharging to the City of Everson wastewater treatment plant was installed; all discharges from the site were apparently routed to the wastewater treatment plant via this line after 1972. Samples taken by E & E for the EPA in 1989 did not identify PCBs at a detection limit of 0.8 to 1.0 ppm. The Nooksack River has repeatedly flooded the Everson area, depositing and eroding large volumes of sediments. The highest level of PCBs found (0.16 ppm) was below the interim sediment quality criteria at that time (0.19 ppm) for PCBs (EPA 1990, *Guidance on Remedial Actions for Superfund Sites With PCB Contamination*, OSWER Directive No. 9355.4-01).

Due to the low levels found in a limited area, the decision was made to focus further investigations on the site and the pipelines leading from site toward the River, and to investigate River sediments further only if evidence was found that suggested significant quantities or levels of PCBs left the site and migrated toward the river. No such evidence was found during the project, so no further river sediment investigations were conducted.

2.3 REMOVAL ACTIVITIES AND RESULTS

Following the RI, the EPA directed the PRPs to assess potential removal actions. A Site Structure/Removal Assessment and Engineering Evaluation/Cost Analysis (EE/CA)(Landau 1993) were

prepared. Following EPA review and incorporation of public comments, the EPA prepared a Removal Action Memorandum dated October 8, 1993. RA objectives included:

- Elimination of potential risks from building structural failure;
- Removal of site structures;
- Reduction/elimination of human health risk, from potential contact, ingestion, or inhalation of site contaminants, to the extent practical; and
- Reduction/elimination of potential off-site migration of contaminants and contamination of groundwater beneath the site, to the extent practical.

More specifically, the RA goals included:

- Removal of soil with greater than or equal to (\geq) 10 ppm PCBs, to the extent practicable; and
- Removal of soil with \geq 200 ppm TPH to a maximum depth of 4 feet BGS or the water table, whichever occurred first.

A non-time critical removal action was conducted by the PRPs between November 1993 and July 1994 (Landau 1994b). The removal included:

- Removal and disposal of building contents;
- Demolition and disposal of the buildings;
- Excavation and disposal of soils from the building area, former storage area, and adjacent areas including the alley and Van Andel parking lot;
- Confirmation soil sampling following excavation;
- Backfilling the excavation with clean fill; and
- Placement of a modified asphalt final cover over all excavated areas.

The entire NWT-SHS site currently consists of an asphalt concrete paved parking lot.

2.3.1 Site Structures

All building contents and site structures were removed from the site and disposed of at permitted Toxic Substances Control Act (TSCA)/RCRA disposal facilities. Debris shown not to contain hazardous substances was disposed at the Columbia Ridge Solid Waste Landfill. Therefore, no contaminated media currently exist above ground at the site.

2.3.2 Soil

Soils were excavated from approximately 40 "grids" laid out across the site. Figure 5 identifies the grids and depths of soil excavation (typically 4 feet BGS, except adjacent to the Silver Fox Restaurant and Van Andel building, where excavation was limited to about 2 feet to prevent damage to the buildings, and the alley where buried utility lines limited excavation to 6 to 8 inches).

Confirmation test results indicate that all soils containing ≥ 10 ppm of PCBs were removed except for one small area in grid 29 (the former storage lot) adjacent to the Van Andel building, where soils with PCB concentrations up to 28 ppm remain (at a depth of 10-12 feet below the cap). Confirmation test results also indicate that soils containing ≥ 1 ppm and < 10 ppm PCBs were removed from the site except for one point in the alley (1.6 ppm), one point southeast of the residence (1.2 ppm), one point on the Van Andel Property (1.5 ppm), one point in grid 34B (2.1 ppm), and several points in grid 29 (up to 7 ppm), soils. The remaining soils with 7 ppm PCBs in grid 29 are approximately 6-7 feet below the cap. Tests show that over 98% of PCBs from the site were removed during excavation (Figure 6).

Excavated soils containing ≥ 1 ppm but < 100 ppm PCBs were disposed of at the Chemical Waste Management Hazardous Waste Landfill in Arlington, Oregon. Soils containing PCBs at concentrations ≥ 100 ppm were incinerated at the hazardous waste incinerator in Aptus, Utah, resulting in a reduction in the toxicity and volume of PCBs at the site.

TPH remains in site soils above the removal goal of 200 ppm at certain locations across the site (Figure 7); however, it is estimated that over 95% of the TPH initially present at the site was removed. The maximum TPH concentration (24,000 ppm) remaining is located grid 3, which was excavated to between 6 and 6.5 feet BGS. TPH-contaminated soils not impacted by PCBs were also disposed of at the Arlington, Oregon facility.

Carcinogenic PAHs were found only in soils on the north side of grid 15 (maximum concentration 0.66 ppm, below the background level of 1.5 ppm). VOCs (benzene 0.52 ppm, ethylbenzene 44 ppm, toluene 67 ppm, and xylene 290 ppm) remain only in the northwest corner of grid 14 and on the west side

of grid 34 (xylene only, at ≤ 2 ppm). Lead was found at 2.91 ppm in grid 7 and arsenic was measured at 11 ppm in grids 22 and 34A.

Downwind and off-site soil areas contain up to 1.2 ppm PCBs versus the background level of 0.52 ppm. TPH, dioxin/furan, and PAH concentrations in downwind soils are below background levels. Arsenic (16 ppm) in off-site soils and lead (327 ppm) in downwind soils only marginally exceed background levels of 10.6 and 100 ppm, respectively.

2.3.3 Groundwater

Five post-RA groundwater monitoring well sampling events have been completed by the PRPs:

- November 2-3, 1994 (Landau 1995a);
- March 8, 1995 (Landau 1995b);
- July 26, 1995 (Landau 1995c);
- October 18, 1995 (Landau 1996); and
- October 29-30, 1996 (Landau 1997).

Monitoring Well MW-2, which was abandoned during removal activities, was replaced by MW-5 approximately 50 feet northwest of the original MW-2 location (Figure 4). The immiscible layer found in MW-2 before it was abandoned was not found in any wells during the post-RA sampling events.

No PCBs or TPH were detected in groundwater from the four monitoring wells sampled during these five events. Detection limits for PCBs ranged from 0.033 ppb to 0.1 ppb for these analyses. Detection limits for TPH were 1,000 ppb as measured by Method 418.1 and 250 ppb as measured by Method WTPH-D.

VOC analyses were conducted only for the first post-RA sampling event, since they had never been detected above levels of concern in previous sampling events, and were not found at significant levels in the first post-RA event. Only one analyte, cis-1,2-dichloroethene, was found at 0.3 ppb in MW-1, well below the MCL of 70 ppb.

Pentachlorophenol (PCP), a wood preservative, was not identified as a contaminant of potential concern during the RI and was not detected in confirmation soil samples collected during the removal action, and therefore was not included in post-RA groundwater sampling. However, when split samples collected by E & E from MW-1 and MW-5 during the fourth and fifth post-RA sampling events were analyzed at the EPA Region 10 Manchester Laboratory, PCP was detected in the samples from MW-5 at

estimated concentrations of 44 ppb (fourth post-RA sampling event) and 18 ppb (fifth post-RA sampling event). PCP was not detected in the split sample taken from MW-1 during either sampling event.

No evidence of any connection between the NWT-SHS site and the PCP detected in groundwater samples has been found to date. Nonetheless, after consultation with Ecology, EPA agreed to collect another round of groundwater samples in December 1997 and to analyze them for the presence of PCP (in addition to site-related contaminants) to determine whether PCP was present at significant levels and to try to identify a source. In addition to the four on-site monitoring wells sampled during previous post-RA sampling events, three off-site piezometers (P-3, P-4, and P-6) were sampled. These piezometers were installed by the PRPs during the RI for the purpose of measuring groundwater depths, and were not installed, constructed, or developed in a manner suited for the collection of representative samples of groundwater. Nonetheless, due to a lack of other monitoring or other wells within a 0.5 mile radius of the site, the piezometers were further developed and sampled.

As with previous post-RA groundwater sampling events, no PCBs were detected in samples collected from monitoring wells during the December 1997 sampling event. PCBs were not detected in samples collected from piezometers either. PCP was detected in monitoring wells and piezometers at low concentrations. PCP was detected in MW-5 at concentrations up to 0.13 ppb, and in MW-1 at an estimated concentration of 0.0017 ppb. PCP was detected in samples from all three piezometers at concentrations up to 0.047 ppb. TPH was not detected in samples collected from any of the monitoring wells, although it was detected in samples from off-site piezometers P-3 (located approximately 400 feet southwest of the site) and P-6 (located approximately 200 feet north of the site) at estimated concentrations of 959 ppb and 2,000 ppb, respectively. No gasoline or diesel range TPH components were identified; the hydrocarbons were characterized as "unidentified lubricating oil" with properties of motor oil and hydraulic fluids. Due to the low volume of sample recovered from piezometer P-4, no TPH analysis was performed for this sample. Based upon the non-detection of TPH in any of the on-site monitoring wells during this and the five previous post-RA groundwater sampling events and the detection of TPH in piezometer P-6 (which is located hydraulically upgradient/crossgradient of the site), it appears that the TPH detected in off-site piezometers is attributable to an off-site source(s).

2.3.4 Site Sediments

The east building floor drain/sump and associated pipeline to the storm drain in the alley and the west building wash basin, exterior catch basin and pipeline to the sanitary sewer were disconnected and

removed during the RA. The Public Works Department of the City of Everson reported that sediments were removed from alley and South Harkness Street storm drain catch basins during spring 1994 clean-out activities. Only sediment samples collected from manholes MH-1 and MH-2 contained PCBs (maximum concentration 1.6 ppm) and TPH (maximum concentration 8,200 ppm).

2.3.5 Risk Assessment

EPA and Science Applications International Corporation (SAIC) prepared a Human Health Risk Assessment and Environmental Evaluation (EPA 1994b) of post-RA conditions utilizing RI and RA sampling and analytical results.

Human Health Risk

EPA's Baseline Human Health Risk Assessment evaluated potential carcinogenic risks and chemical hazards to human health based on exposure to hazardous substances left in place at the site following the RA. No risk of long-term direct exposure (contact) to hazardous substances remaining on-site exists. All above ground structures were removed; soils were removed generally to a depth of four feet BGS and the area was brought back to grade with clean fill and completely paved over with asphalt.

For the same reasons, no risks were identified based on potential inhalation of hazardous substances.

No risks were identified with groundwater ingestion because no contaminants of concern were detected in groundwater. Furthermore, all residents in the vicinity of the site and downgradient of between the site and the Nooksack get their water from the City of Everson water supply system. No other wells or uses of groundwater were identified in the area.

No risks associated with surface water were evaluated because virtually all contaminants of potential concern (COPCs) were removed from the site and potential pathways for overland storm/sanitary waste water flow were eliminated.

Only the remaining exposure routes, ingestion and dermal contact with remaining soil contaminants, were evaluated.

TPH was not considered a COPC for human health at this site. TPH was and still is present in site soils at elevated concentrations; however, the TPH found was characterized as heavy or mineral oils, and did not contain benzene, ethylbenzene, toluene, xylene, or other COPCs above risk-based concentrations. Furthermore, the soils containing the highest levels of TPH were removed. As previously noted, TPH was not found in groundwater at levels of concern during the RI or RA. The maximum concentration

(1,300 ppb) was detected in monitoring well MW-2 during the July 1993 groundwater sampling event. As discussed above, subsequent to the completion of the RA, a total of six rounds of groundwater sampling have been completed by the PRPs and/or EPA. TPH was not detected in samples collected from any of the monitoring wells during any of these six sampling events, although it was detected in off-site piezometers during the sixth post-RA sampling event at maximum estimated concentrations of 2,000 ppb.

The risk assessment was performed using two highly conservative approaches, both of which assumed residential land use at the site. The first approach evaluated the reasonable maximum exposure (RME) scenario, in which a lifetime (350 days per year for 30 years) exposure to the maximum detected concentrations of contaminants of concern remaining in all surface soil samples taken outside the area of the RA was assumed.

A second lifetime residential exposure scenario was developed combining all contaminants of concern for all samples from surface to 3 feet BGS, including samples from underneath the asphalt cover. Exposure point concentrations are based on the 95% upper confidence level (UCL) concentration calculated from all 0 to 3 feet BGS sample results. The lifetime excess risk from exposure to arsenic and/or PCBs, assuming no further actions at the site, was calculated to be 10^{-5} or less under both scenarios (2 excess cancers per 1,000,000 people for PCBs and 3 per 100,000 people for arsenic). Using the same exposure assumptions and background soil data the same excess cancer risk (3 per 100,000) was calculated for arsenic. Therefore, cancer risks associated with arsenic at the site are no greater than those found in background areas unimpacted by the site. No non-carcinogenic chemical hazards were identified.

The scenarios utilized to estimate risks are considered highly conservative, as are the estimates of exposure point concentrations since contamination is not uniform across the site. The default toxicity values utilized in risk calculations are believed to overestimate risks. Therefore, actual site risks are likely significantly below the calculated values.

Given the contaminant levels present, even short term direct exposure in the event contaminated soils are excavated would not be likely to pose significant risks.

Ecological Risk

Potential risks to ecological receptors from site-related contaminants were assessed in the Environmental Evaluation (EPA 1994b). Wildlife and domesticated animal exposure in the "urban ecosystem" of the site was considered negligible due to the general lack of habitat conditions, removal of

contaminants, and placement of an asphalt cover over the site, which combine to eliminate ongoing sources and pathways for ecological exposure.

PCBs were found at concentrations of 0.16 ppm in Nooksack River sediment during a pre-RI Ecology investigation. This concentration was below the EPA interim sediment quality criteria at that time (0.19 ppm), and is below Department of Interior guidance values for PCBs considered to be generally protective of wildlife such as migratory birds. Based on these criteria/guidance and the fact that the site is now paved and the pathway from the site to the outfall has been eliminated by the removal of the site pipeline system, EPA judged that quantification of potential risks from river sediments was not necessary.

2.4 FIVE-YEAR REVIEW REQUIREMENTS

Section 121 of CERCLA includes a requirement for statutory five-year reviews of any site where hazardous substances, pollutants, or contaminants remain at the site above levels which allow for unlimited use and unrestricted exposure. The purpose of such five-year reviews is to ensure that any remedial actions performed remain protective of public health and the environment and are functioning as designed. At the NWT-SHS site, the ROD called for a five-year review primarily to determine whether groundwater is contaminated. Per the ROD, if no evidence of groundwater contamination at the site is identified, the EPA is to evaluate the need for additional monitoring and/or reviews.

The NWT-SHS ROD issued after completion of the RA identified no further action under CERCLA authority as the selected remedy for the site. The decision was based on OSWER Directive 93550-30 which states that for sites with cumulative risks $\leq 10^{-4}$, response action is generally not warranted unless there are adverse environmental impacts, MCL exceedances, or other site-specific reasons. Post-RA conditions at the site do not indicate adverse environmental impacts, MCL exceedances for site-related COPCs, or other reasons to perform an FS or satisfy ARARs. The ROD required that groundwater monitoring continue until performance of the five-year review.

While not a component of the selected remedy, the State of Washington required that the PRPs prepare a filing of institutional controls (deed notices) to inform future property owners that PCBs and TPH remain beneath the site surface above Model Toxic Control Act (MTCA; WAC 173-340) cleanup levels. This requirement is enforced by the State.

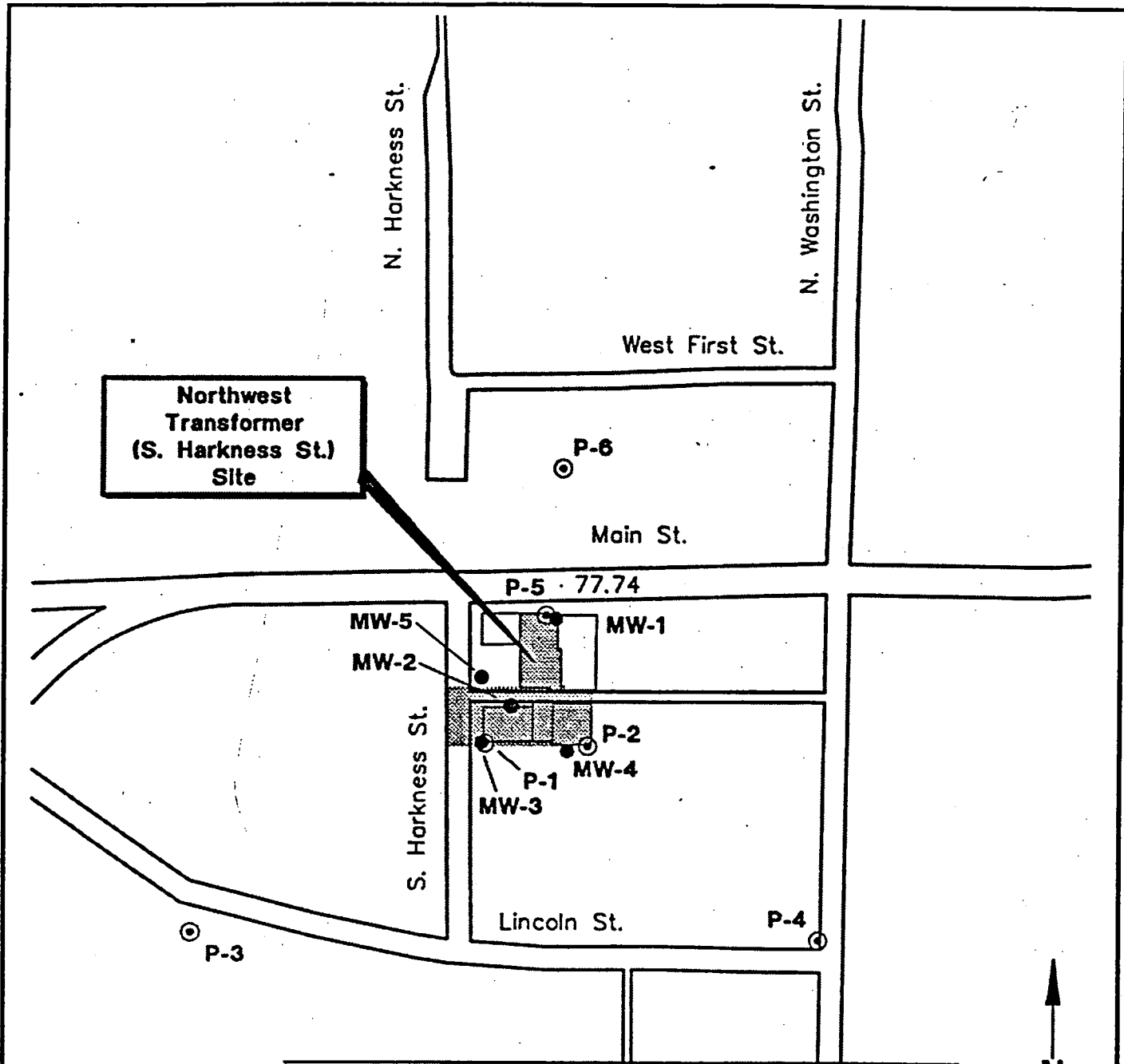
The cleanup goal specified in the EPA removal action memorandum (EPA 1993) specified removal and disposal of all soils containing PCBs above 1 ppm and TPH above 200 ppm, to the extent practicable, in order to allow the RA to serve as the final remedial action for the site.

The success of the RA in meeting these goals is outlined in Section 3. Detailed information can be found in the RI/RA report for NWT-SHS (Landau 1994b).

2.5 STANDARDS/ARARs REVIEW

During this review, no standards/ARARs or changes to existing Standards/ARARs listed in the ROD were identified that could impact the protectiveness of the current remedy.

Although it is not an ARAR, recent EPA guidance (1996) recommends a freshwater sediment quality criterion of 0.023 ppm for PCBs, which is more stringent than the interim 1990 guidance level of 0.19 ppm used for comparison during the project. State efforts to identify Freshwater Sediment Quality Values in Washington State (July 1997) identified Apparent Effects Thresholds for *Hyallois azteca* at 0.450 ppm and for Microtox at 0.021 ppm, although it was noted that those values are not intended for use as cleanup goals. It is noted that it has been over two decades since the outfall leading from the site to the river (where PCBs were detected in sediments at 0.16 ppm) was disconnected. Since that time, the river has flooded repeatedly, eroding and depositing large quantities of sediments. Based upon this and the lack of evidence of migration of significant quantities of PCBs from the site, it is reasonable to believe that the remedy remains protective.



KEY

- MW-1 ● Onsite Monitoring Well Location and Identification
- P-1 ⊙ Offsite Piezometer Location and Identification

Note: Monitoring Well MW-2 was abandoned December 9, 1993. Onsite piezometers P-1, P-2, and P-5 were abandoned on January 17, 1994.

0 200 400
Approximate Scale in Feet



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International Specialists in the Environment
Seattle, Washington

NORTHWEST TRANSFORMER
(S. Harkness Street)
Everson, Washington

Reference: Drawing from *Landau Associates, Inc.* Report:
Remedial Investigation/Removal Action
Northwest Transformer (S. Harkness St.) Site
Everson, Washington; Figure 21

Figure 4
MONITORING WELL & PIEZOMETER LOCATIONS

Drawn: MRE	Date: 3/31/97	Job No. ZM5071	Dwg. No. ZM5071F4
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3. CURRENT SITE CONDITIONS

The following evaluation of current (Post-RA) site conditions is based primarily on data presented in the RI/RA Report (Landau 1994b), five subsequent groundwater monitoring technical memoranda, a non-sampling on-site visual inspection conducted by E & E personnel on July 25, 1997, and a groundwater sampling event conducted in December 1997 by E & E personnel. Appendix A contains photographs of the site taken during the July 25, 1997 site visit. Site conditions are summarized below:

- All surface structures have been demolished and disposed;
- Over 98% of all PCBs have been removed. Only a few isolated subsurface soil zones remain which contain PCBs ≥ 1 ppm;
- Over 95% of all TPH has been removed. Several subsurface zones contain TPH above the cleanup goal of 200 ppm;
- Cleanup was limited by the existence of active subsurface pipelines in shallow soils beneath the alley, which prevented deep excavation, and the requirement to maintain building (Van Andel and Silver Fox Restaurant) foundation integrity, which also limited contaminated soil excavations near and below these structures;
- No evidence of PCB groundwater contamination was found during six post-RA site groundwater monitoring events completed by the PRPs and/or the EPA;
- No evidence of TPH groundwater contamination at the site was found in on-site monitoring wells during the six post-RA groundwater monitoring events. During the sixth post-RA groundwater monitoring event, TPH was found in groundwater samples collected from off-site piezometers P-3 (located approximately 400 feet downgradient of the site) and P-6 (located approximately 200 feet upgradient/crossgradient of the site) at estimated concentrations of 959 ppb and 2,000 ppb, respectively. Based upon the non-detection of TPH in any of the on-site monitoring wells during any post-RA groundwater sampling events and the detection of TPH in piezometer P-6 (located upgradient/crossgradient of the site), it appears likely that the TPH detected in off-site piezometers is attributable to an off-site source(s);
- Site excavations were backfilled with clean fill and the entire site has been covered with an asphalt cap. The area is presently used as a parking lot;
- Pavement (cover) appears to be in good condition. Joints between buildings and pavement appear to be secure; and

- On-site wells and off-site piezometers appear to be in good condition. Protective casings are locked and in good repair.

The RA successfully met past and current ARARs and RA goals to the extent practicable.

In accordance with additional State requirements documented in the CERCLA No Further Action ROD, the owners of the affected properties have recorded notices on their deeds acknowledging the presence of contamination on their properties and their duty, and that of subsequent property owners, to sample soils if the cap is disturbed. If such sampling indicates that the soils are contaminated, they must be disposed of in accordance with State and Federal law.

Split samples collected by E & E from MW-5 during the fourth and fifth post-RA sampling events contained PCP at estimated concentrations of 44 ppb and 18 ppb, respectively. After EPA apprised the PRPs and Ecology of these results, it was decided to collect a sixth round of post-RA groundwater samples in December 1997 to test for PCP as well as site-related contaminants. The maximum PCP level detected in that effort was 0.13 ppb. Although PCP was detected in several post-RA groundwater monitoring events, it does not appear to be a site-related contaminant - no confirmed or suspected source has been identified through sampling, records searches, or physical observation of the area. Further, the most recent results (December 1997) are below the MCL (1 ppb), and concentrations in MW-5 (the only well in which PCP has been detected in more than one sampling event) have decreased over time.

The NWT-SHS site was deleted from the NPL in September, 1997 since all cleanup actions were complete and all site cleanup goals had been met. It should be noted that five-year reviews may continue even at deleted sites where hazardous substances remain on site above levels which allow for unrestricted use and unlimited exposure.

4. RECOMMENDATIONS

Based on this review, the selected remedy—no further CERCLA action—remains protective of human health and the environment. All exposure routes have been eliminated except for the potential subsurface soil to groundwater and potential consequent groundwater to surface water routes. Post-RA groundwater studies do not indicate soil to groundwater transfer of site-related COPCs.

No new or modified technologies which would significantly enhance the current action's continued protectiveness at the site have been identified.

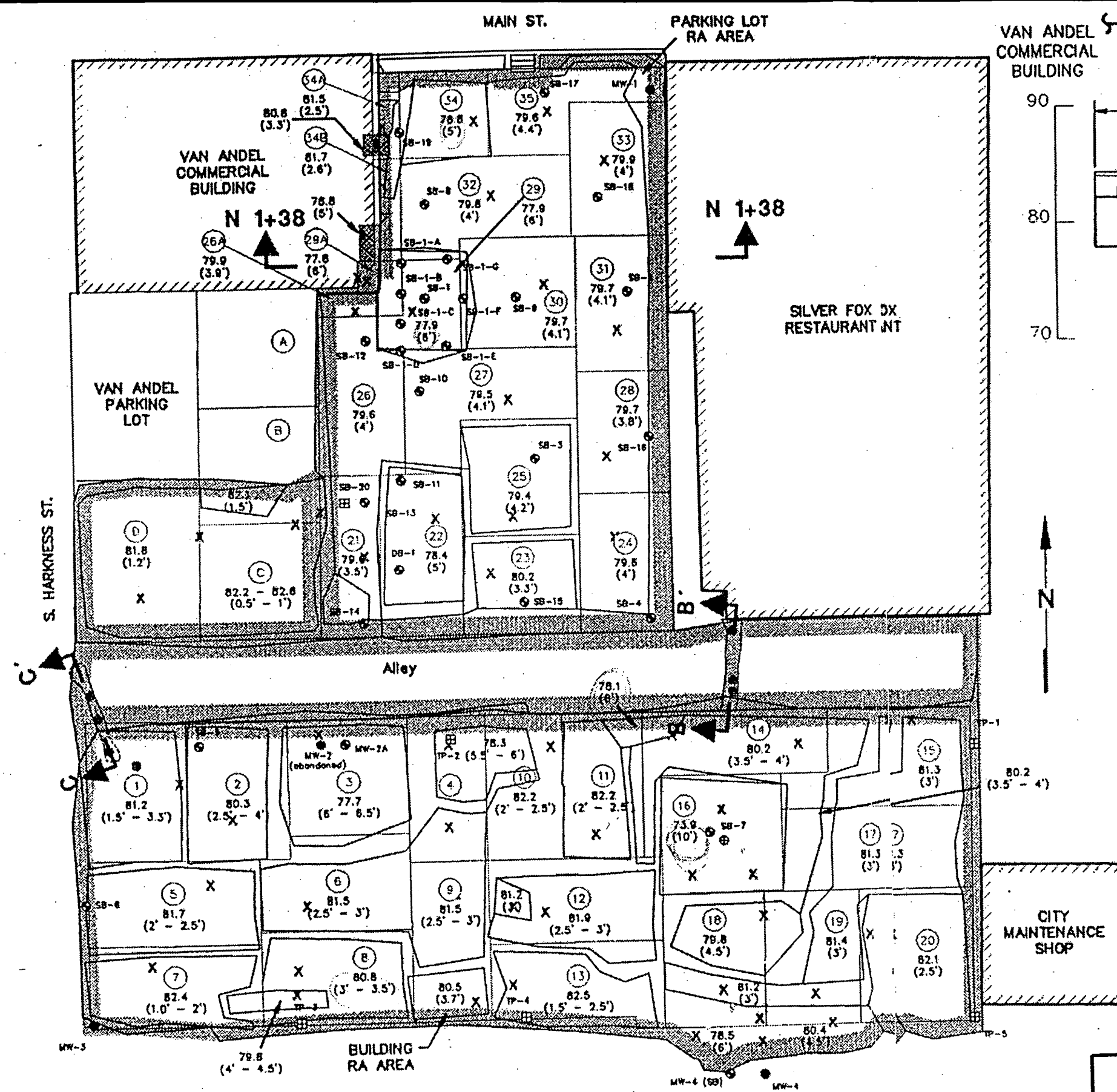
Based on the evidence for the success of the removal action and the non-detection of site-related COPCs in groundwater during subsequent sampling, no future groundwater monitoring for site-related contaminants appears necessary at the site. Although PCP was detected in several post-RA groundwater monitoring events, it does not appear to be a site-related contaminant. Further, the most recent results (December 1997) are below action levels, and concentrations in MW-5 (the only well in which PCP has been detected in more than one sampling event) have decreased over time.

The on-site wells on appear to remain in good condition based on the December 1997 sampling activities, do not require active maintenance, and are located outside areas that would likely impact the usability of the overall location. However, based on this review, the wells are no longer needed to support site-related groundwater monitoring activities, and could be abandoned by the PRPs.

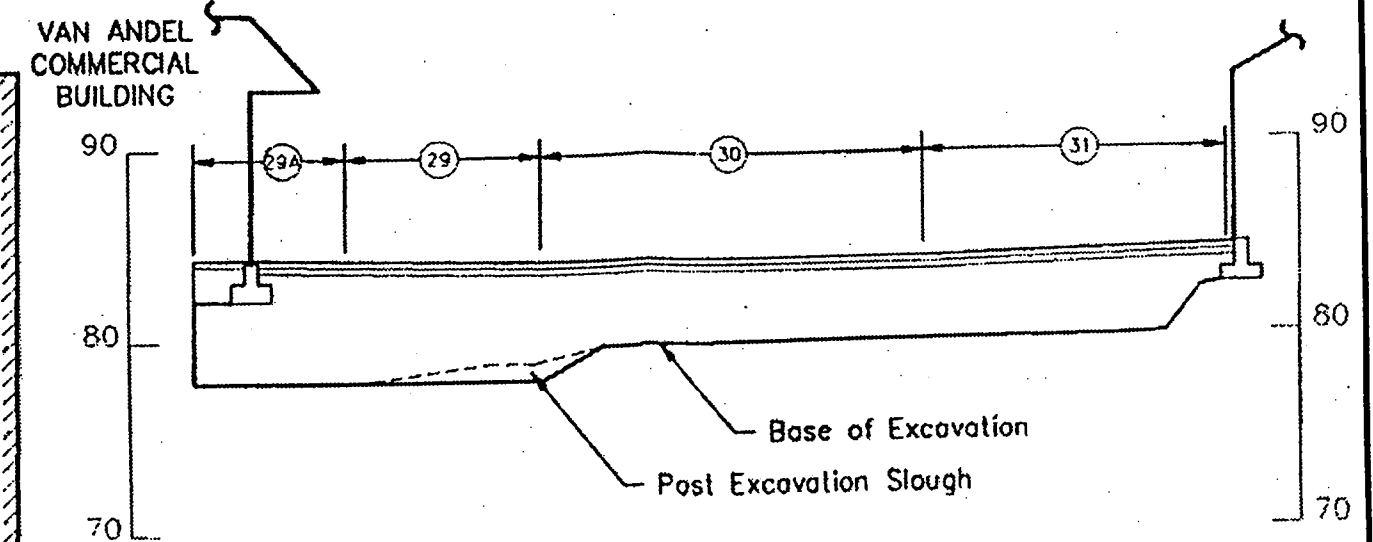
No Institutional Controls were included in the selected remedy under CERCLA. However, in accordance with additional State requirements documented in the CERCLA No Further Action ROD, the owners of the affected properties have recorded deed notices acknowledging the presence of contamination and their duty, and that of subsequent property owners, to sample soils if the cap is disturbed and if soils are found to be contaminated, to dispose of them in accordance with State and Federal law.

During this five-year review, EPA and Ecology determined that the deed notices required by Ecology have been recorded but that the following should be done to enhance protectiveness: (1) the City of Everson should again be formally notified of the controls required so that engineering diagrams and other documents related to the alley can be annotated with references to the presence of PCBs and TPH in soils 6 to 8 inches below the cover in the alley; and (2) both the Van Andel and Silver Fox Restaurant property owners should be notified again of the findings of this investigation/removal for soils at their site-property boundaries. In July 1998, EPA provided the City and adjacent property owners

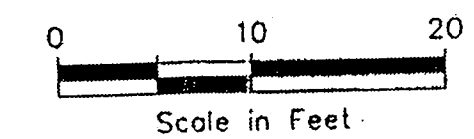
letters reminding them of the location of residual contamination and the need to take care and notify Ecology in the event the cap is breached. They were also provided with copies of the draft five-year review for their review and comments/input.



Plan View

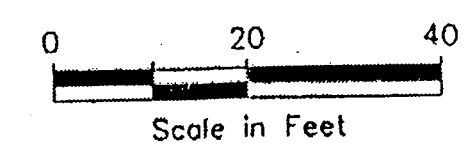


Section N 1+38



KEY

- 82.2 Average Elevation at Base of RA Excavation (2' - 2.5')
- 82.2 Average Depth of Excavation Below Previous Ground Surface.
- RA Excavation Limits
- ② Confirmation Soil Sample Grid Boundary and Corresponding Identification Number
- X RA Confirmation Soil Sample Location
- TP-1 RI Test Pit Location and Identification
- SB-1 RI Soil Boring Location and Identification
- MW-1 Monitoring Well

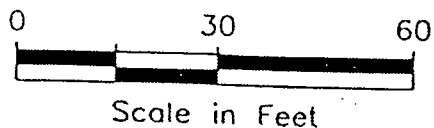
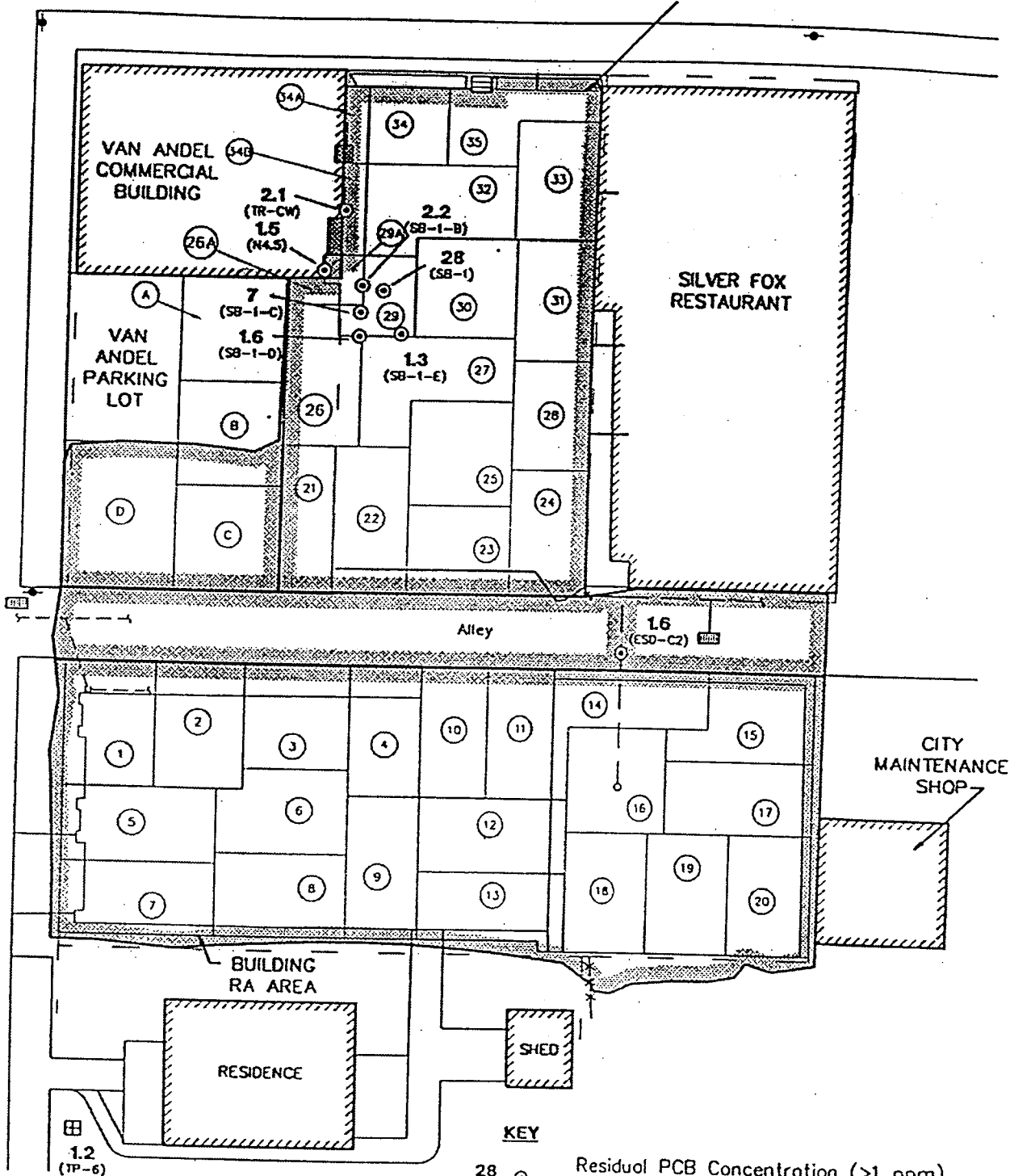
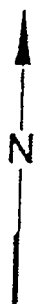


Adapted from Preliminary As-Built Drawing No. 2 by Larry Steele and Associates, Inc. (August 18, 1994) and Preliminary As-Built Drawing No. 5 by Landau Associates, Inc. (August 26, 1994)

SOUTH HARKNESS ST.

MAIN ST.

PARKING LOT
RA AREA



KEY

28
(SB-1)

Residual PCB Concentration (>1 ppm),
Sampling Location, and Identification



Limits of RA Excavations



Confirmation Soil Sample Grid Boundary
and Corresponding Identification Number



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NORTHWEST TRANSFORMER
(S. Harkness Street)
Everson, Washington

Reference: Drawing from Landm Associates, Inc. Report:
Remedial Investigation/Removal Action
Northwest Transformer (S. Harkness St.) Site
Everson, Washington; Figure 37

Figure 6

POST RA RESIDUAL
PCB CONCENTRATIONS

Drawn: MRE	Date: 3/31/97	Job No. ZM5071	Dwg. No. ZM5071F6
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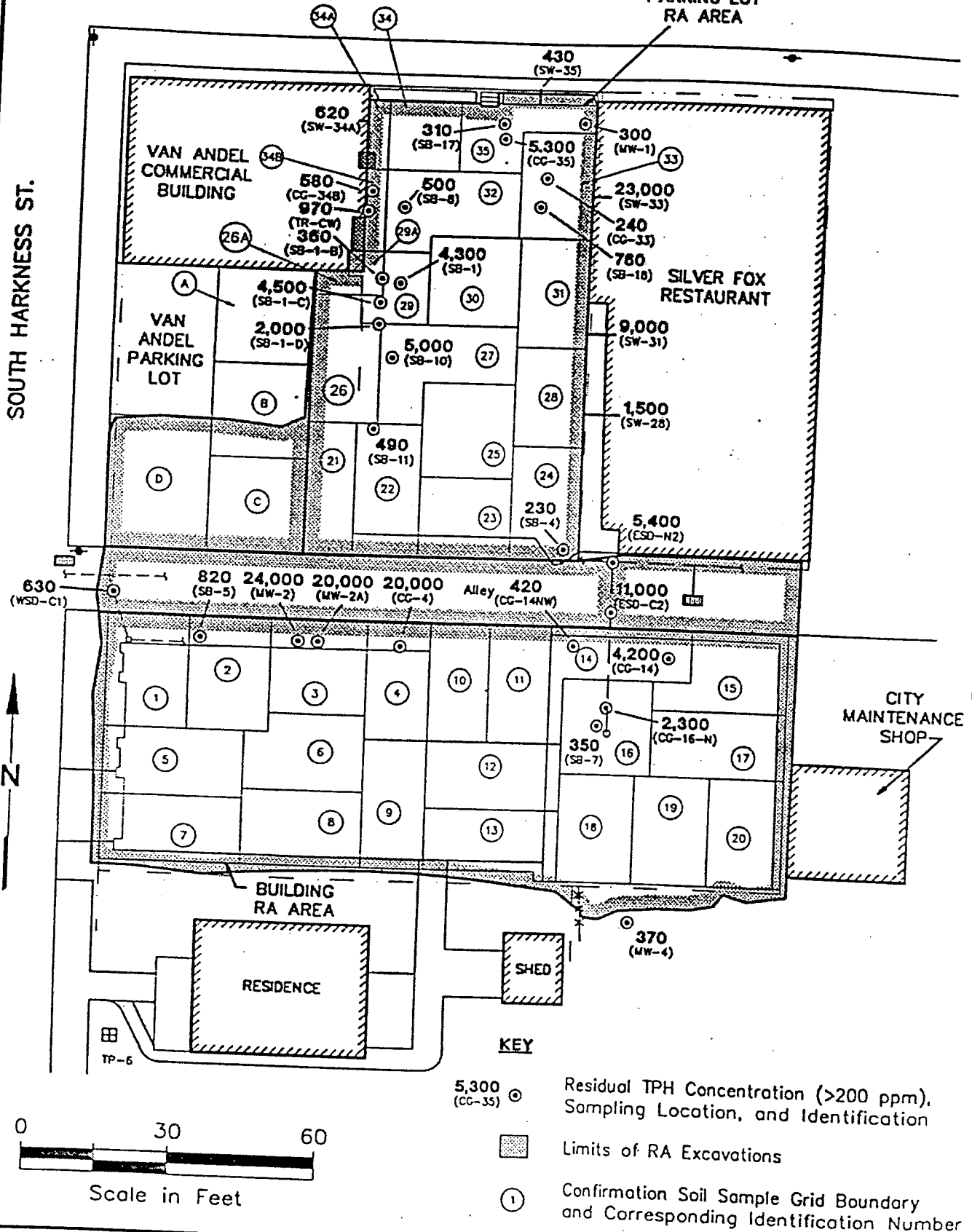
SOUTH HARKNESS ST.

MAIN ST.

PARKING LOT
RA AREA

N

0 30 60
Scale in Feet



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NORTHWEST TRANSFORMER
(S. Harkness Street)
Everson, Washington

Reference: Drawing from Landline Associates, Inc. Report:
Remedial Investigation/Removal Action
Northwest Transformer (S. Harkness St.) Site
Everson, Washington, Figure 33

Figure 7
POST RA RESIDUAL
TPH CONCENTRATIONS

Drawn: MRE	Date: 3/31/97	Job No. ZM5071	Dwg. No. ZM5071F7
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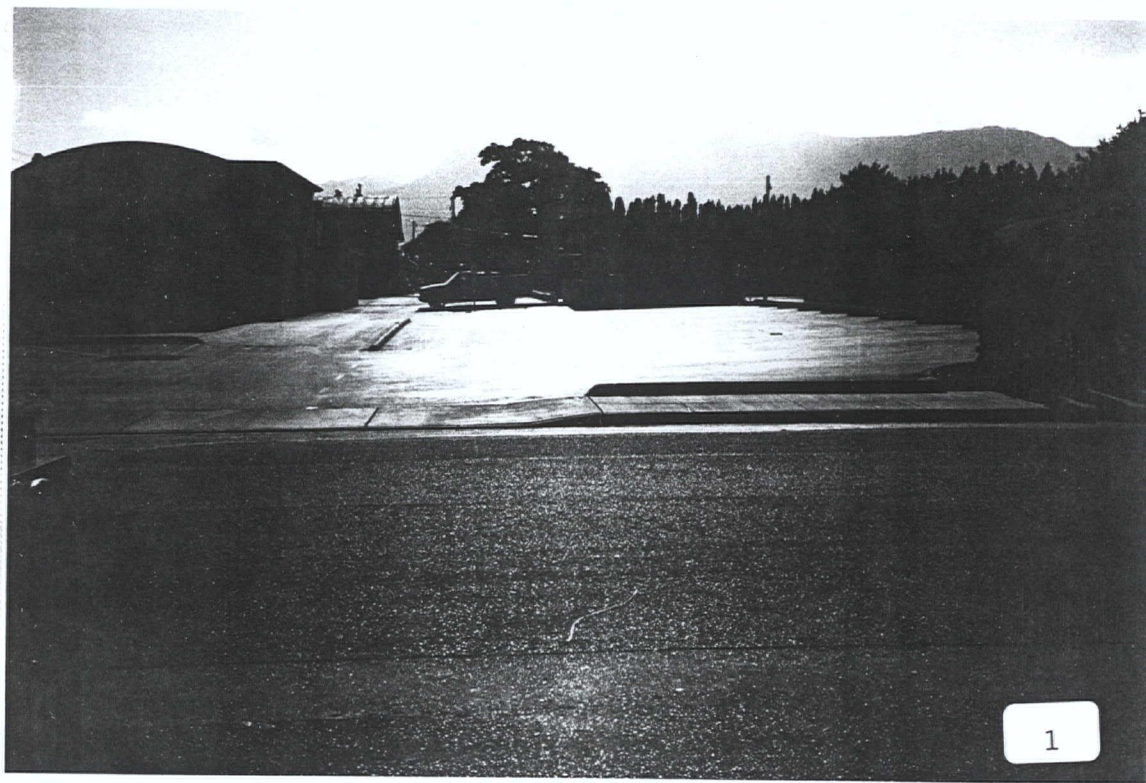
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- U.S. Environmental Protection Agency (EPA). 1996. Office of Solid Waste and Emergency Response, *Eco Update, Eco Tox Thresholds, Vol. 3, No. 2*, January 1996.
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APPENDIX A

**NORTHWEST TRANSFORMER
SOUTH HARKNESS SITE**

EVERSON, WASHINGTON

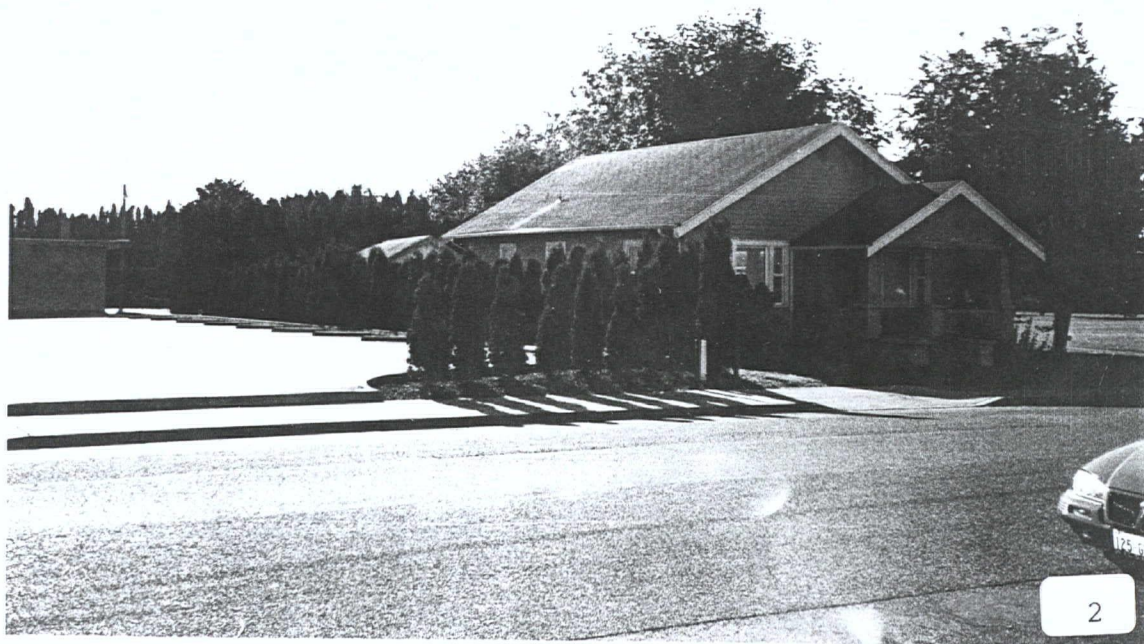
**PHOTOGRAPHS
JULY 25, 1997**



Northwest Transformer, South Harkness Site, Everson, WA

Photo Taken 7/25/97 by A. Hafferty

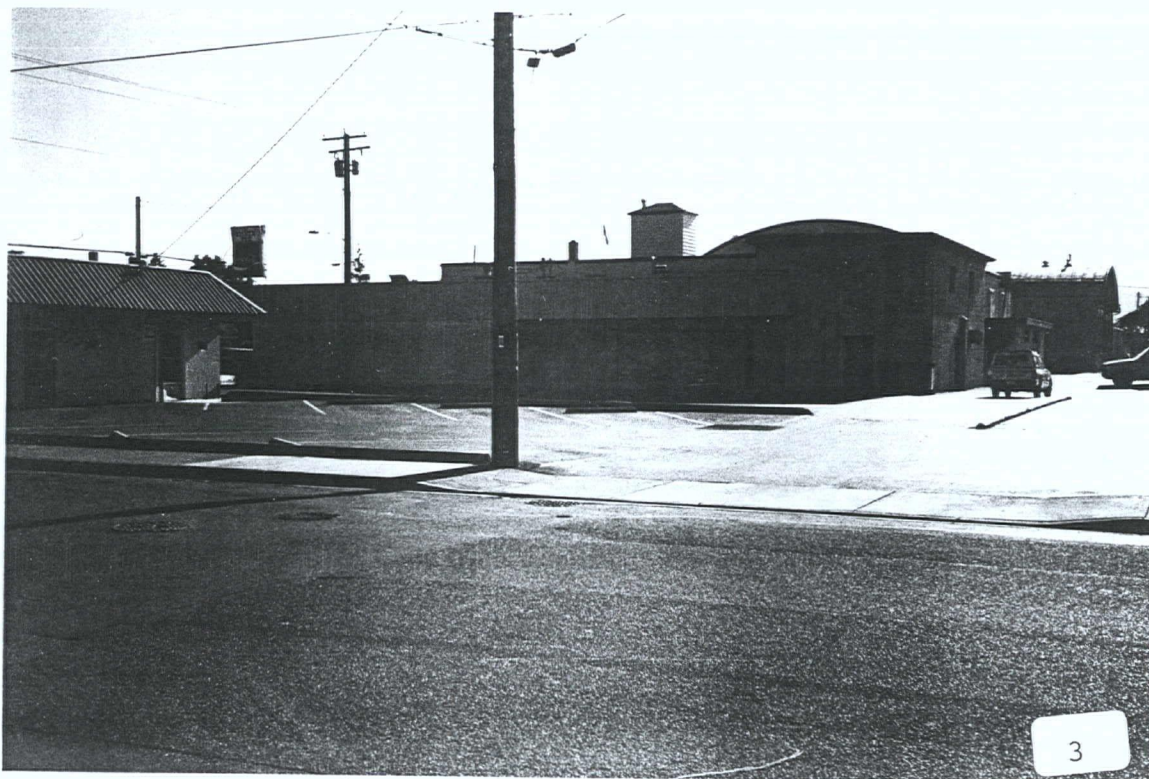
- 1) Looking east from across street (Harkness) from in front of post office.



Northwest Transformer, South Harkness Site, Everson, WA

Photo Taken 7/25/97 by A. Hafferty

- 2) Looking southeast from across S. Harkness Street, from in front of post office.



Northwest Transformer, South Harkness Site, Everson, WA

Photo Taken 7/25/97 by A. Hafferty

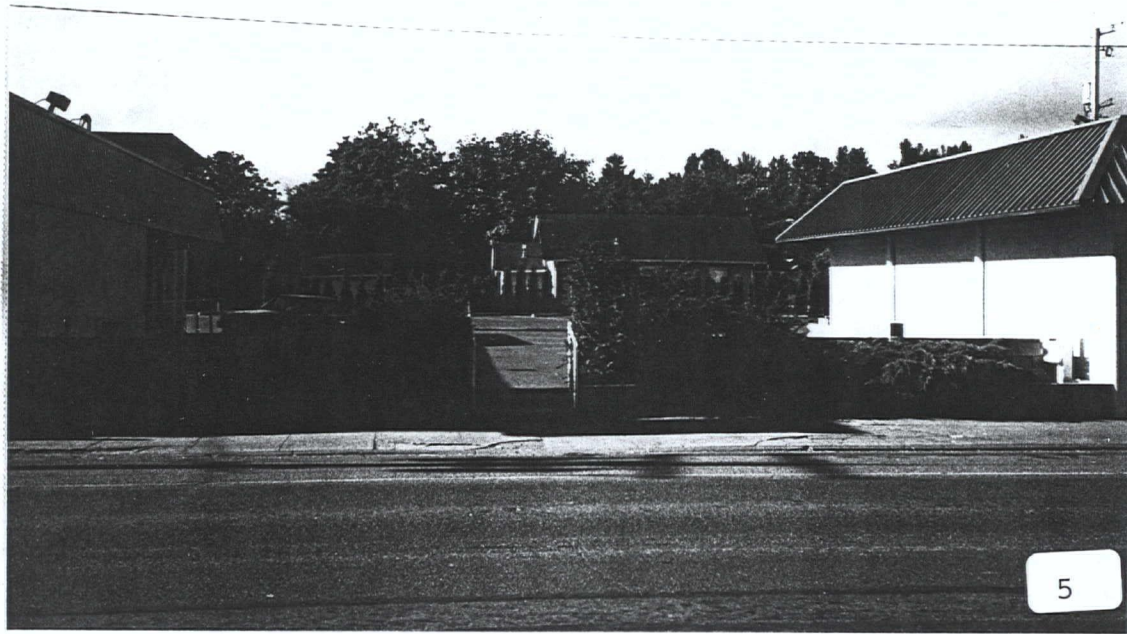
- 3) Looking northeast from across S. Harkness Street, from in front of post office.



Northwest Transformer, South Harkness Site, Everson, WA

Photo Taken 7/25/97 by A. Hafferty

- 4) Looking southeast from southwest corner of Main Street and



Northwest Transformer, South Harkness Site, Everson, WA

Photo Taken 7/25/97 by A. Hafferty

5) Looking south from across Main Street.



Northwest Transformer, South Harkness Site, Everson, WA

Photo Taken 7/25/97 by A. Hafferty

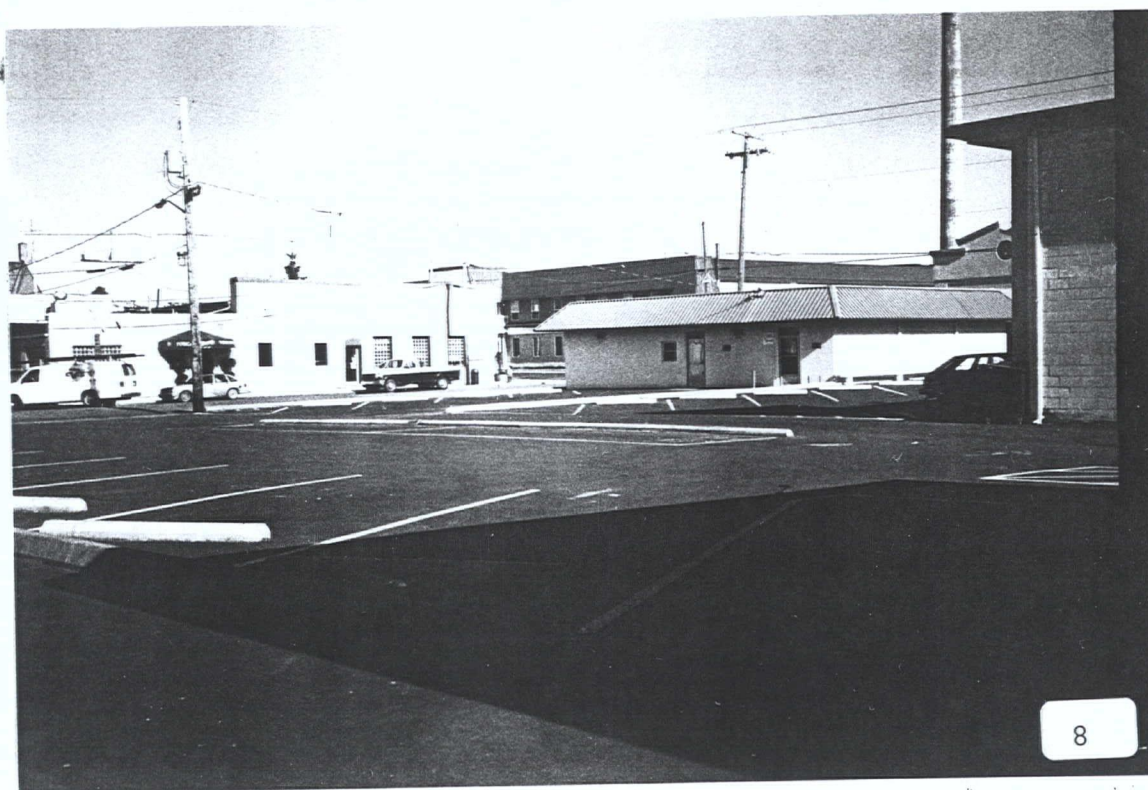
6) Looking west from alley at southeast corner of senior citizens' center.



Northwest Transformer, South Harkness Site, Everson, WA

Photo Taken 7/25/97 by A. Hafferty

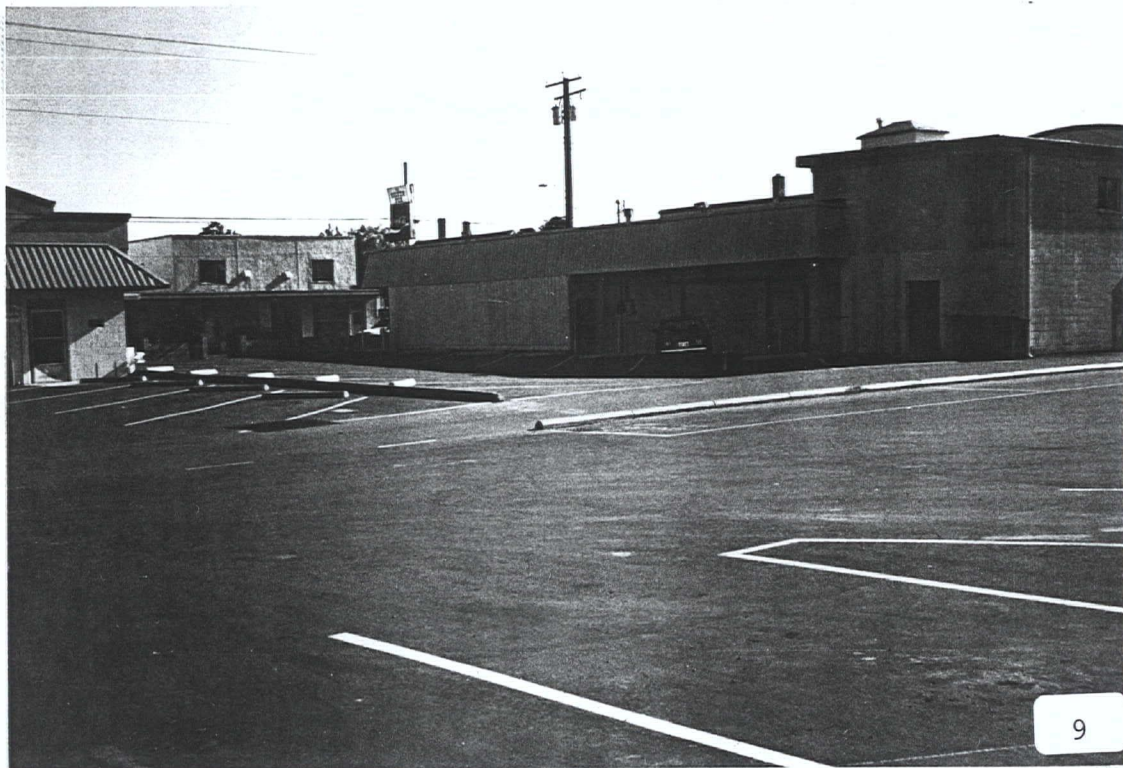
7) Looking southwest from southwest corner of City Hall.



Northwest Transformer, South Harkness Site, Everson, WA

Photo Taken 7/25/97 by A. Hafferty

8) Looking northwest from southwest corner of city maintenance shoe.



9

Northwest Transformer, South Harkness Site, Everson, WA

Photo Taken 7/25/97 by A. Hafferty

9) Looking northeast from MWB.



10

Northwest Transformer, South Harkness Site, Everson, WA

Photo Taken 7/25/97 by A. Hafferty

10) Looking northeast from intersection of S. Harkness Street and McCookil Street

Northwest Transformer
South Harkness Site
Everson, WA

Photo taken 7/25/87 by A. Hafferty
looking northeast from MW3

9

Northwest Transformer
South Harkness Site
Everson, WA

Photo taken 7/25/87 by A. Hafferty
looking northeast from intersection
of S. Harkness and McGorkle Sts.

10